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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,398	01/16/2004	Kenji Hattori	5332-9PCON	7478

7590

08/09/2005

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EXAMINER

HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,398

Applicant(s)

HATTORI ET AL.

Examiner

Sow-Fun Hon

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --.

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/08/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

i) The term "substrate" used for both the semi-transmitting mirror-possessing substrate and the glass substrate, is confusing. It is suggested that Applicant use the phrase "semi-transmitting mirror-possessing substrate assembly" instead to distinguish between the two substrates.

ii) The thickness of the foundation film should be in a range of greater than 0 to 8 nm rather than including zero, in order to be present, unless it provides for the optional absence of the foundation film.

Comment on PCT Search Report

3. The X references from the PCT search report can no longer be used in a 35 U.S.C. 102 rejection of the present claims due to the preliminary amendment filed 01/16/04.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka et al. (US 6,686,985), regarding the lower limit foundation film thickness of 0 nm.

Regarding claim 1, Tanaka teaches semi-transmitting mirror-possessing (reflection layer is semi-transparent, column 7, lines 5-20) substrate having a glass substrate (200, column 7, lines 20-25), a foundation film (insulator film 201, column 7, lines 25-30) formed on said glass substrate, and a semi-transmitting reflective film (reflection layer is thinly formed so as to be semi-transparent when the pixel electrode 234 formed is used as a transfective-type, column 7, lines 10-20). See Fig. 4 of Tanaka below.

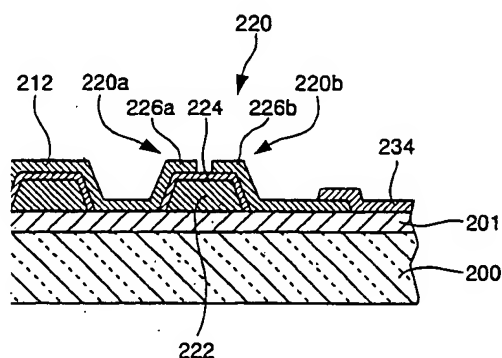


FIG. 4

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Tanaka teaches that if there are no problems caused by the substrate, the foundation film can be omitted (insulator film 201, column 7, lines 25-30), meeting the claimed lower thickness limit of zero.

Regarding claim 4, Tanaka teaches that said semi-transmitting reflective film is made of Al (aluminum reflection layer thinly formed so as to be semi-transparent, column 7, lines 10-20), which includes Al alloys.

Regarding claim 5, Tanaka teaches a liquid crystal display apparatus (column 7, lines 35-45), which has the semi-transmitting mirror-possessing substrate, and is a semi-transmitting-type according to its pixel electrode (transflective, column 7, lines 10-20).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US 6,686,985) in view of Matsuzaki et al. (US 5,157,470), regarding the foundation thickness range of greater than 0 to 8 nm.

Regarding claims 1-3, Tanaka teaches semi-transmitting mirror-possessing (reflection layer is semi-transparent, column 7, lines 5-20) substrate having a glass substrate (200, column 7, lines 20-25), a foundation film (insulator film 201, column 7,

lines 25-30) formed on said glass substrate, and a semi-transmitting reflective film (reflection layer is thinly formed so as to be semi-transparent when the pixel electrode 234 formed is used as a transfective-type, column 7, lines 10-20). See Fig. 4 of Tanaka below.

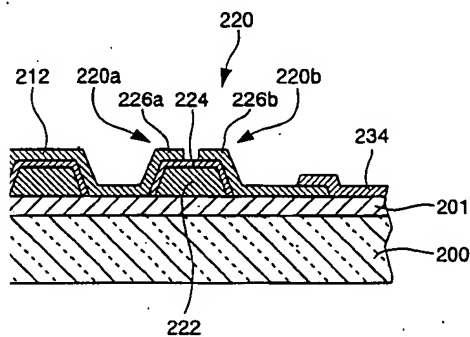


FIG. 4

Although Tanaka fails to teach that the foundation film is made to have a thickness in a range of greater than 0 to 8 nm, because Tanaka teaches that if there are no problems of metal film 222 removal by heat treatment and impurities diffusing into the metal film 222, the foundation film can be omitted (insulator film 201, column 7, lines 20-30), hence suggesting the desirability of minimizing the foundation film, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have varied the thickness of the foundation film to obtain the range of greater than 0 to 8nm, in order to minimize the amount of foundation film.

Tanaka fails to teach that the foundation film is made of silicon oxide, let alone that it has a chemical composition ratio x of oxygen (O) to silicon (S) in the silicon oxide (SiO_x) in a range of 1.5 to 2.0.

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Matsuzaki teaches a thin film of silicon oxide which, which has a thickness range of 0.5 – 10 nm (column 7, lines 50-55), which overlaps the claimed range of greater than 0 to 8nm, and prevents contamination of the aluminum electrodes (column 7, lines 45-50). Matsuzaki teaches that the composition of the silicon oxide is represented by a general formula of SiO_x which has a chemical composition ratio x of oxygen (O) to silicon (S) in the silicon oxide (SiO_x) in a range of 1.5 to 2.0 (column 5, lines 65-67).

Therefore, because Matsuzaki teaches that the thin film of silicon oxide prevents contamination of the aluminum electrodes, and Tanaka teaches that the foundation film prevents impurities from diffusing into the metal film, hence solving the same problem, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a thin film of silicon oxide is represented by a general formula of SiO_x which has a chemical composition ratio x of oxygen (O) to silicon (S) in the silicon oxide (SiO_x) in a range of 1.5 to 2.0, with a thickness range of greater than 0 to 8nm, taught by Matsuzaki, as the foundation film of Tanaka, in order to minimize the amount of foundation film and yet provide the desired protection from impurities contamination of the metal films.

Regarding claim 4, Tanaka teaches that said semi-transmitting reflective film is made of Al (aluminum reflection layer thinly formed so as to be semi-transparent, column 7, lines 10-20), which includes Al alloys.

Regarding claim 5, Tanaka teaches a liquid crystal display apparatus (column 7, lines 35-45), which has the semi-transmitting mirror-possessing substrate, and is a

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semi-transmitting-type according to its pixel electrode (transflective, column 7, lines 10-20).

Regarding claim 6, Tanaka teaches semi-transmitting mirror-possessing (reflection layer is semi-transparent, column 7, lines 5-20) substrate having a glass substrate (200, column 7, lines 20-25), a foundation film (insulator film 201, column 7, lines 25-30) formed on said glass substrate, and a semi-transmitting reflective film (reflection layer is thinly formed so as to be semi-transparent when the pixel electrode 234 formed is used as a transflective-type, column 7, lines 10-20), made of Al (aluminum reflection layer thinly formed so as to be semi-transparent, column 7, lines 10-20), which includes Al alloys. See Fig. 4 of Tanaka below.

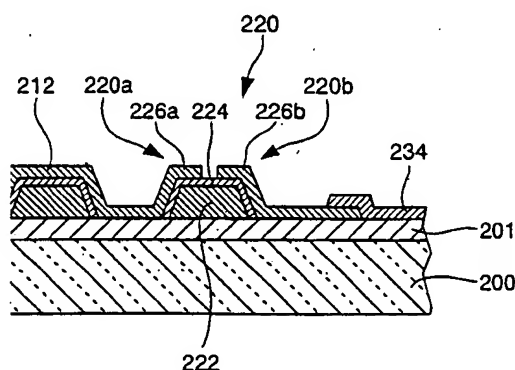


FIG. 4

Although Tanaka fails to teach that the foundation film is made to have a thickness in a range of greater than 0 to 8 nm, because Tanaka teaches that if there are no problems of metal film 222 removal by heat treatment and impurities diffusing into the metal film 222, the foundation film can be omitted (insulator film 201, column 7, lines 20-30), hence suggesting the desirability of minimizing the foundation film, it would have

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been obvious to one of ordinary skill in the art at the time the invention was made, to have varied the thickness of the foundation film to obtain the range of greater than 0 to 8nm, in order to minimize the amount of foundation film.

Tanaka fails to teach that the foundation film is made of silicon oxide, let alone that it has a chemical composition ratio x of oxygen (O) to silicon (S) in the silicon oxide (SiO_x) in a range of 1.5 to 2.0.

Matsuzaki teaches a thin film of silicon oxide which, which has a thickness range of 0.5 – 10 nm (column 7, lines 50-55), which overlaps the claimed range of greater than 0 to 8nm, and prevents contamination of the aluminum electrodes (column 7, lines 45-50). Matsuzaki teaches that the composition of the silicon oxide is represented by a general formula of SiO_x which has a chemical composition ratio x of oxygen (O) to silicon (S) in the silicon oxide (SiO_x) in a range of 1.5 to 2.0 (column 5, lines 65-67).

Therefore, because Matsuzaki teaches that the thin film of silicon oxide prevents contamination of the aluminum electrodes, and Tanaka teaches that the foundation film prevents impurities from diffusing into the metal film, hence solving the same problem, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a thin film of silicon oxide is represented by a general formula of SiO_x which has a chemical composition ratio x of oxygen (O) to silicon (S) in the silicon oxide (SiO_x) in a range of 1.5 to 2.0, with a thickness range of greater than 0 to 8nm, taught by Matsuzaki, as the foundation film of Tanaka, in order to minimize the amount of foundation film and yet provide the desired protection from impurities contamination of the metal films.

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Regarding claim 7, Tanaka teaches a liquid crystal display apparatus (column 7, lines 35-45), which has the semi-transmitting mirror-possessing substrate, and is a semi-transmitting-type according to its pixel electrode (transflective, column 7, lines 10-20).

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon

Sow-Fun Hon

08/05/05

Harold Pyon
HAROLD PYON
SUPERVISORY PATENT EXAMINER

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8/8/05